The occurrence of São Tomé Short-tail *Amaurocichla bocagii* and Newton's Fiscal *Lanius newtoni* in the montane forests of São Tomé

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Received 10 March 2009

SUMMARY.—The globally threatened São Tomé Short-tail *Amaurocichla bocagii* and Newton's Fiscal *Lanius newtoni*, both of which are endemic to São Tomé in the Gulf of Guinea, have been considered to be mostly confined to low-elevation forests. A playback survey in the island's central massif found three (possibly four) family groups of short-tail and a single fiscal along a 4-km trail above 1,300 m. At least the short-tail appears able to use, and breed in, montane forests, extending the possible Area of Occupation of this Vulnerable species.

The island of São Tomé in the Gulf of Guinea holds at least 17 species of single-island endemic birds, plus two shared with the nearby island of Príncipe and another shared with Príncipe and Annobón (Melo 2007, Melo & Jones in press). Several of the São Tomé endemics are of conservation concern, making the island one of the most important Endemic Bird Areas in tropical Africa (Stattersfield *et al.* 1998).

Most threatened endemics, including the globally Vulnerable São Tomé Short-tail *Amaurocichla bocagii* and the Critically Endangered Newton's Fiscal *Lanius newtoni*, are still poorly known, and systematic data on their habitat use and altitudinal range are still lacking. Jones & Tye (2006) set an altitudinal limit for *A. bocagii* at 500 m, despite that Dallimer *et al.* (2003) recorded one bird at 1,100 m, near Estação Souza, in the island's central montane massif. Newton's Fiscal *Lanius newtoni* has been collected at up to 1,060 m (Jones & Tye 2006), although most recent records come from lower areas (Schollaert & Willem 2001). Both species were also found in higher parts of the central massif by Olmos & Turshak (2007) and Rocha (2008), but without further details.

Following sightings of both species at Estação Souza by one of us (ACA), we decided to assess if short-tails and fiscals are regularly found in the montane forests of the Pico São Tomé or if previous records referred to transient individuals.

Methods

We undertook a playback survey on 16–17 August 2008 along the trail to Pico de São Tomé, in the central mountains of São Tomé. This trail runs along the north-facing slope of a steep forested valley with a stream at its bottom, and traverses the small plateau at Estação Souza, where both species had been recorded previously. Although the trail intersects some drainage lines, most of the heavy rainfall is quickly absorbed by the volcanic soil.

The area is cloaked by montane forest, commonly wrapped in mist, growing on steep ground, except for small occasional plateaux. The closed canopy reaches over 25 m and branches and trunks are densely covered in epiphytic lichens, mosses, ferns and orchids. The understorey is in places dense, with tree ferns such as the endemic *Cyathea welwitschii*, giant gingers *Renealmia grandiflora* and *Costus giganteus*, and the giant begonias *Begonia baccata* and *B. crateris*, amongst others.

Typical trees include *Trichilia grandifolia*, *Pauridiantha insularis*, *Pavetta monticola*, large figs such as *Ficus chlamydocarpa* and *F. kamerunensis*, *Croton stelluliferus*, *Erytrococca molleri*, *Homalium henriquensii* and the white-flowered *Tabernaemontana stenosiphon*. The South American tree *Cinchona quina* has invaded many areas. These forests were largely spared large-scale disturbance by man because of the rugged topography and wet climate (Jones & Tye 2006, Vaz & Oliveira 2007).

A 4 km-stretch of trail, including Estação Souza, was flagged at roughly 200-m intervals. At each point we played the songs of the short-tail and fiscal (from Chappuis 2001) using a MP3 player equipped with a small amplifier during the morning and afternoon of 16–17 August. At each point we recorded the number of individuals of the survey species responding vocally or seen, as well as simple habitat descriptors: altitude (m), litter cover (%), canopy cover (%), terrain (slope, plateau and ridge) and distance to water (m). Canopy and litter cover were estimated using sighting tubes with crosshairs and quadrats (Elzinga *et al.* 2001).

Results and Discussion

Short-tails were detected at ten of the 18 survey points, being readily attracted and responding to playback. At five of these points, birds were detected only in the morning, three only during the afternoon and two in both periods. Totals of 29 short-tails and one fiscal were registered along the 4-km stretch surveyed using playback (Table 1). A single fiscal was heard at Point 14, whilst up to seven and nine individual short-tails were detected around a single playback point (Table 1). These latter probably refer to points at the edge of territories between two or more family groups, as some of the birds seen were clearly juvenile, having shorter bills and a yellowish gape. At least one of these young was observed foraging for itself, suggesting that nesting had occurred during the previous two months during the long dry season (Jones & Tye 2006).

Dallimer *et al.* (2009) did not detect these species during a recent systematic bird survey, which included the area of this study, using distance sampling and point counts. Although their study was undertaken at a different season (December–January), when birds may have been less conspicuous, playback proved an effective method of detecting short-tails and (to a lesser extent) fiscals, although the first-named species had probably largely finished breeding and, in principle, was less responsive.

All survey points were at altitudes >1,300 m. The fiscal was found at 1,395 m and short-tails up to 1,540 m, setting new altitudinal limits for both species (Dallimer *et al.* 2003, Jones & Tye 2006). Our short-tail records suggest that at least three and probably four family groups were present along the surveyed trail, or roughly one per 1 km of valley.

We found no significant relationship between the number of short-tails recorded and the type of terrain, sites with canopy cover greater or smaller than 80% or litter cover greater or smaller than 70% (χ^2 tests, all $P>0.05$). All points, except one, were >100 m from permanent water, precluding a more detailed analysis about the suggested relationship between short-tails and streams (Jones & Tye 2006). These results should be viewed with caution because of the small sample size and limited period of the study.

Our survey confirmed that short-tails do occur in the montane forests of the central São Tomé massif at altitudes above those recorded in the literature, and suggest fiscals do likewise. The number of short-tail records, territorial behaviour and the presence of family groups strongly suggest the species is resident rather than transient at these elevations. That both fiscals and short-tails can occur in montane forests was to be expected, given that both survived the loss of most low-elevation forests to shade cacao and coffee plantations in the

TABLE 1

Results of the playback survey for São Tomé Short-tail *Amaurocichla bocagii* along a 4-km stretch of trail in the central massif of São Tomé, 16–17 August 2008.

Point	Time (morning)	No. birds	Time (afternoon)	No. birds	Terrain	Distance to water	Litter Cover	Canopy Cover	Altitude	Latitude	Longitude
0	06.06 h	0	14.10 h	0	Plateau	>100 m	100%	81%	1,545 m	00°15′40.7″N	006°33′29.7″E
1	06.37 h	0	14.30 h	0	Plateau	>100 m	100%	75%	1,530 m	00°15′41.3″N	006°33′31.7″E
2	07.03 h	0	15.00 h	0	Slope	>100 m	52%	63%	1,500 m	00°15′41.4″N	006°33′29.4″E
3	07.33 h	1	16.20 h	7	Slope	>100 m	44%	63%	1,480 m	00°15′50.0″N	006°33′43.1″E
4	08.00 h	1	16.50 h	1	Slope	>100 m	44%	69%	1,460 m	00°15′50.4″N	006°33′47.7″E
5	08.40 h	0	14.40 h	1	Slope	>100 m	88%	63%	1,420 m	00°15′49.4″N	006°34′06.7″E
6	09.10 h	0	15.03 h	1	Slope	>100 m	80%	25%	1,395 m	00°15′50.4″N	006°33′47.7″E
7	09.40 h	0	15.28 h	1	Slope	>100 m	100%	88%	1,390 m	00°15′50.4″N	006°36′47.7″E
8	10.00 h	0	15.50 h	0	Slope	>100 m	63%	75%	1,380 m	00°15′50.1″N	006°34′02.4″E
9	10.30 h	0	16.30 h	0	Slope	>100 m	100%	88%	1,395 m	00°15′49.7″N	006°34′07.9″E
10	08.45 h	2	15.55 h	0	Ridge	70 m	100%	88%	1,540 m	00°15′43.2″N	006°33′35.2″E
11	08.15 h	9	15.26 h	0	Plateau	>100 m	100%	75%	1,520 m	00°15′54.2″N	006°33′37.3″E
12	07.50 h	1	14.48 h	0	Plateau	>100 m	100%	88%	1,455 m	00°16′00.2″N	006°33′40.6″E
13	07.20 h	3	14.10 h	0	Ridge	>100 m	100%	81%	1,395 m	00°16′00.3″N	006°33′46.5″E
14	06.50 h	1	13.40 h	0	Plateau	>100 m	100%	88%	1,365 m	00°16′05.9″N	006°33′49.9″E
15	07.05 h	0	13.55 h	0	Plateau	>100 m	63%	75%	1,645 m	00°15′41.0″N	006°33′24.4″E
16	07.30 h	0	13.30	0	Plateau	>100 m	100%	63%	1,659 m	00°15′39.6″N	006°33′18.3″E
17	07.55 h	0	12.55 h	0	Ridge	>100 m	52%	100%	1,660 m	00°15′46.1″N	006°33′11.4″E
18	08.30 h	0	12.30 h	0	Ridge	>100 m	69%	63%	1,666 m	00°15′49.1″N	006°33′11.5″E
19	08.55 h	0	12.03 h	0	Ridge	>100 m	50%	75%	1,599 m	00°15′54.3″N	006°33′08.5″E

18–19th centuries (Seibert 2002, Jones & Tye 2006). On the other hand, the specific habitat characters that determine the presence of both species demand proper assessment, as they remain unrecorded from apparently suitable sites that are well covered by ornithologists and birdwatchers, such as Lagoa Amélia (Christy & Clarke 1998).

Acknowledgements

This field work was conducted during the First Ornithology and Bird Conservation Training Course, promoted by the A. P. Leventis Foundation and BirdLife International, with support from the Associação de Biólogos São-tomenses (ABS), Instituto Superior Politécnico (ISP) and Associação Monte Pico. Fábio Olmos and Christine Steiner were our tutors during the field work and we are grateful for their help in preparing an early draft of this manuscript. Martim Melo, Phil Atkinson and Nik Borrow helped to improve the first draft of the manuscript.

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